Congruent triangles: SAS worksheet – Grade 8

Grade 8 · Mixed level · 20 questions · **Version X8151**

Name: _____ Date: _____ Score: ___ / 20

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1. GH = JK and GI = JL. Which angle fact is needed to use SAS?
   A. ∠I = ∠L **B.** ∠H = ∠K **C.** ∠G = ∠J

2. AB = DE and AC = DF. Which angle fact is needed to use SAS?
   A. ∠B = ∠E **B.** ∠C = ∠F **C.** ∠A = ∠D

3. AB = DE, AC = DF and ∠A = ∠D. Are the triangles congruent?
   A. Yes, by SAS **B.** No **C.** Yes, by SSS **D.** Yes, by ASA

4. △PQR ≅ △XYZ. Which side is equal to PQ?
   A. ZX **B.** XY **C.** YZ

5. In △GHI, which angle is included between sides GH and GI?
   A. ∠G **B.** ∠H **C.** ∠I

6. △LMN ≅ △STU. Which angle is equal to ∠L?
   A. ∠T **B.** ∠S **C.** ∠U

7. △GHI ≅ △JKL. Which angle is equal to ∠G?
   A. ∠J **B.** ∠L **C.** ∠K

8. △LMN ≅ △STU. LM = 2x + 2 and ST = 14. Find x.
   Answer: _____

9. △GHI ≅ △JKL by SAS. ∠H = 83° and ∠G = 51°. What is ∠L, in degrees?
   Answer: _____ °

10. △ABC ≅ △DEF. BC = 4x + 6 and EF = 14. Find x.
    Answer: _____

11. △GHI ≅ △JKL. The sides of △GHI are 9 cm, 8 cm and 10 cm. What is the perimeter of △JKL, in cm?
    Answer: _____ cm

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12. △PQR ≅ △XYZ by SAS. ∠Q = 57° and ∠P = 78°. What is ∠Z, in degrees?

    Answer: _____ °

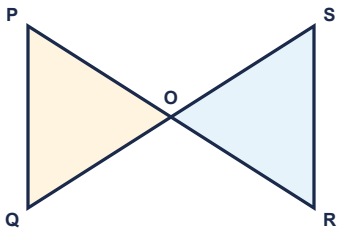
13. △ABC ≅ △DEF, and CA = 9 cm. How long is FD, in cm?

    Answer: _____ cm

14. △GHI ≅ △JKL. IG = 2x + 3 and LJ = 15. Find x.

    Answer: _____

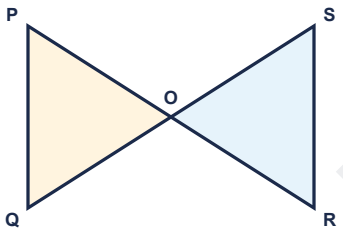
15. What does the crossing diagram show about PQ and SR?



    A. They are equal and parallel **B.** They are perpendicular **C.** They are unrelated

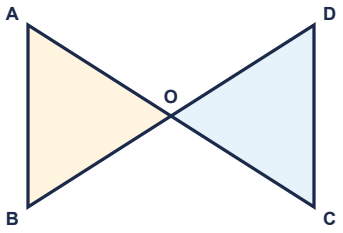
    D. They meet at O

16. Segments PR and QS cross at O and bisect each other. ∠PQO = 55°. What is ∠RSO, in degrees?



    Answer: _____ °

17. Segments AC and BD cross at O and bisect each other. ∠ABO = 53°. What is ∠CDO, in degrees?



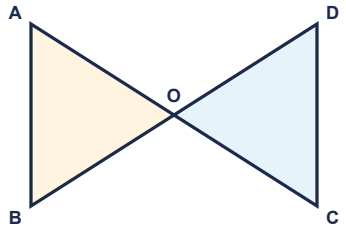
    Answer: _____ °

18. Two triangles are congruent by SAS. One has sides 9 cm and 12 cm with a third side of 19 cm. What is the perimeter of the other, in cm?

    Answer: _____ cm

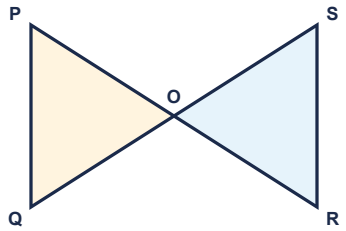
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19. Segments AC and BD cross at O, with AO = OC = 13 cm and BO = OD = 10 cm. AB = 14 cm. How long is CD, in cm?



Answer: _____ cm

20. Segments PR and QS cross at O, with PO = OR and QO = OS. Why is △POQ ≅ △ROS?



A. SAS, using vertically opposite angles **B.** SSS, using three equal sides

C. ASA, using parallel lines **D.** RHS, using a right angle

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Answer key · Version X8151

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1. **C (∠G = ∠J)**
2. **C (∠A = ∠D)**
3. **A (Yes, by SAS)**
4. **B (XY)**
5. **A (∠G)**
6. **B (∠S)**
7. **A (∠J)**
8. **6**
9. **46**
10. **2**
11. **27**
12. **45**
13. **9**
14. **6**
15. **A (They are equal and parallel)**
16. **55**
17. **53**
18. **40**
19. **14**
20. **A (SAS, using vertically opposite angles)**

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